Docket 5-ES-111
Strategic Energy Assessment for January 1, 2022 through December 31, 2028
WPPI Energy Response to Supplemental Data Request

Carbon reduction activities

- *A description of any carbon reduction goals established for the provider, which specifies:*
  - *The baseline year used for establishing the goal and the year (or years) in which certain reduction goals are to be reached; and*
  - *The magnitude of the reduction goal, expressed as both a percentage and million metric tons of CO_2 ($MMTCO_2$).*

Response:

Goal
WPPI's current (2017 – 2021) business plan includes the goal of "develop[ing] a cost-effective strategy to achieve future reductions in [greenhouse gas] emissions in the range of reductions expected to occur in the region." For this purpose, WPPI tracks its CO_2 emissions and compares its emission rate and emission reductions to those of other regional utilities. Additionally, WPPI is targeting net-zero carbon electricity by 2050, subject to maintaining reliability and affordable rates for WPPI members and their customers.

Baseline
WPPI uses 2005 as the baseline year tracking emission reductions.

Emission metric
WPPI quantifies its emissions on the basis of emissions associated with serving its load. Under this method, if WPPI is a net purchaser of energy from the MISO market during a given year, the emissions associated with serving load are equal to the emissions from WPPI-owned resources and the emissions associated with purchased power, including power purchased from the MISO market. If WPPI is a net seller into the MISO market during the year, the emission rate associated with energy sales into the MISO market is assumed to be equal to the emission rate associated with energy used to serve load. So, for example, if WPPI's load is equal to 90% of its total generation and purchased power, then the emissions associated with serving load are equal to 90% of the emissions associated with the power generated and purchased by WPPI. The emissions quantification metric of emissions associated with serving load appears to be consistent with the metric specified in the Governor's Executive Order #38, which establishes the goal of "ensuring all *electricity consumed within the State of Wisconsin* is 100 percent carbon-free by 2050" (emphasis added).

Methodology
WPPI utilizes the following methodology to quantify the emissions associated with serving its load:

WPPI-owned units and unit power purchase agreements – Emissions from WPPI-owned units and unit power purchase agreements are as reported to the EPA in accordance with 40 CFR Part 75. This information is available for viewing on the EPA's Air Markets Program Data online database.

System purchases from other utilities – Emissions from utilities from whom WPPI purchases system power are quantified on the same basis as WPPI quantifies its own emissions. Generation and power purchase data for the applicable utility are obtained from the utility's FERC Form 1 filing. The utility's total emissions are divided by its total generation and purchases to obtain an average emission rate

(lbs CO_2 per MWh). This emission rate is applied to WPPI's purchases from the utility (in MWh) to obtain the emissions associated with WPPI's purchases.

MISO purchases and system purchases from unspecified sources – An estimated MISO emission rate is determined using (i) emission and generation data from the most-recent version (currently 2019) of EPA's Emissions & Generation Resource Integrated Database (eGRID), and (ii) MISO fuel mix data for the year in question. The eGRID database is used to determine average MISO emission rate by fuel (*e.g.* in 2019, MISO coal units had average CO_2 emission rate of 2,229 lbs/MWh). The emission rate for each fuel type is then applied to that fuel's percentage of MISO's fuel mix during the year in question (*e.g.* coal comprised 33.3% of MISO's fuel mix in 2020). The resulting MISO emission rate (in lbs CO_2 per MWh) is applied to WPPI's MISO or system purchases from unspecified sources (in MWh) to obtain the emissions associated with such WPPI purchases. The MISO emission rate used in the 2022, 2024, 2026 and 2028 projections is based on projected MISO generation and emissions from the Energy Information Administration's Annual Energy Outlook 2021.

Baseline adjustment – WPPI currently serves 51 member utilities, including 41 members in Wisconsin. 13 members, including 3 members in Wisconsin, joined WPPI during or after 2005, so emissions associated with serving these utilities during part or all of 2005 were not included in WPPI's 2005 emissions. In order to provide a baseline that reflects the estimated 2005 emissions associated with supplying the 51 utilities that currently comprise WPPI's membership, the estimated 2005 MISO emission rate is applied to the 2005 purchases of the 13 future WPPI members from their then-current wholesale suppliers.

Imputed emissions for null energy – A portion of WPPI's power supply is from renewable resources from which WPPI does not receive, or for which it receives and later sells, the associated renewable energy certificates (RECs). This includes the renewable portion of energy purchased from the MISO market. The emissions associated with this "null energy" are separately accounted for in the emissions data shown below. In addition to actual emissions, the data show imputed emissions determined by applying MISO's residual emission rate to the null energy used to serve WPPI's load. The residual emission rate is the emission rate associated with the non-renewable portion of MISO's fuel mix.

- *Data specifying carbon emission levels on the provider's system in calendar year (CY) 2020, which permits clear analysis of progress to date towards any carbon reduction goals, in both percentage and $MMTCO_2$ terms. The system-wide CY 2020 data should be consistent with the facility-level data on 2020 CO_2 emissions provided in Schedule 8A, and the response to this supplementary data request should clearly explain how the system-wide totals can be reconciled with the facility-level data.*

  Response: 2020 emissions (calculated as described above) are shown in the following table, along with 2005 baseline emissions (adjusted as described above) and emissions reductions from 2005 to 2020. The table shows both the emissions associated with serving all of WPPI's load and the emissions associated with serving WPPI's Wisconsin load. For each of these cases, the table shows both actual emissions and actual emissions plus imputed emissions associated with null energy.

		WPPI Total		Wisconsin Only	
		Actual	Actual and Imputed	Actual	Actual and Imputed
2005 Adjusted	Emissions ($MMTCO_2$)	4.24	4.27	3.95	3.97
2020 Actual	Emissions ($MMTCO_2$)	2.09	2.39	1.93	2.21
	Reduction from 2005				
	$MMTCO_2$	2.15	1.88	2.01	1.76
	Percent	50.8%	44.1%	51.0%	44.3%

- *Projected carbon emission levels on the provider's system in CY 2022, CY 2024, CY 2026 and CY 2028, which specifies projected progress towards any carbon reduction goals, in both percentage and $MMTCO_2$ terms.*

  Response: Projected 2022, 2024, 2026 and 2028 emissions (calculated consistent with the description above) are shown in the following table, along with 2005 baseline emissions (adjusted as described above) and projected emissions reductions from 2005 to 2022, 2024, 2026 and 2028.[1] The table shows both the emissions associated with serving all of WPPI's load and the emissions associated with serving WPPI's Wisconsin load. For each of these cases, the table shows both actual emissions and actual emissions plus imputed emissions associated with null energy.

		WPPI Total		Wisconsin Only	
		Actual	Actual and Imputed	Actual	Actual and Imputed
2005 Adjusted	Emissions ($MMTCO_2$)	4.24	4.27	3.95	3.97
2022 Projected	Emissions ($MMTCO_2$)	2.06	2.36	1.91	2.18
	Reduction from 2005				
	$MMTCO_2$	2.17	1.91	2.04	1.79
	Percent	51.3%	44.8%	51.5%	45.0%
2024 Projected	Emissions ($MMTCO_2$)	2.04	2.30	1.89	2.13
	Reduction from 2005				
	$MMTCO_2$	2.20	1.97	2.06	1.84
	Percent	51.8%	46.2%	52.1%	46.4%
2026 Projected	Emissions ($MMTCO_2$)	2.09	2.37	1.94	2.19
	Reduction from 2005				
	$MMTCO_2$	2.14	1.90	2.01	1.78
	Percent	50.6%	44.6%	50.8%	44.8%
2028 Projected	Emissions ($MMTCO_2$)	2.04	2.30	1.89	2.14
	Reduction from 2005				
	$MMTCO_2$	2.20	1.97	2.06	1.84
	Percent	51.9%	46.0%	52.1%	46.2%

- *A narrative explaining the anticipated causes behind projected changes in carbon emissions levels in each year for which data is provided. This narrative should address the relationship between changes in*

[1] WPPI's projected emissions reflect current estimates and inherently involve risks and uncertainties. Actual results could differ materially due to a variety of factors, including assumptions (which include but are not limited to those that could impact WPPI load, resource costs and reliability and resource adequacy requirements) not being realized, scientific or technological developments, evolving sustainability strategies, changes in carbon markets, evolving government regulations and orders.

carbon emissions levels and the data submitted through the standardized SEA schedules regarding unit retirements, new generating facilities, purchases, energy efficiency, demand response, and DER. In specific, the narrative should explain in detail the impacts on projected emissions from generation additions and retirements, with reference to the 2020 facility emissions data provided in Schedule 8A.

Response:

The following factors are expected to reduce emissions in 2022, 2024, 2026 and 2028 relative to 2020:

- WPPI began purchasing energy from the 100 MW Point Beach Solar Energy Center beginning in September, 2021.
- Utility system purchases with higher emission rates are scheduled to terminate in years between 2020 and 2028.

WPPI projects that it will experience load growth averaging 0.1% per year, partially offsetting the emission reductions that would otherwise be achieved

WPPI purchases power from the Point Beach Nuclear Plant, whose two units operate on an 18-month refueling cycle. Two years out of every three, one of the two units has a refueling outage. Every third year, both units have a refueling outage, resulting in lower nuclear purchases by WPPI, higher purchases from the MISO market, and higher emissions associated with serving load. Point Beach is scheduled to have two refueling outages in 2026, resulting in higher WPPI emissions in 2026 in 2024 or 2028.

Reliability impacts of potential unit retirements

Providers must submit:

- All documents associated with Attachment Y2 and Attachment Y filings submitted to or received from MISO in CY 2020 and CY 2021.
- All documents submitted to or received from MISO associated with Attachment Y2 and Attachment Y filings regarding a retirement proposed to occur on a date within the SEA data collection period (CY 2019-CY 2028), to the extent those documents are not already identified through the first request

Response:

[redacted]

Utility resource planning

Providers must submit (as one or more documents) the following information:

- A narrative description of the driving factors behind additions and retirements, including an explanation of the rationales for each retirement, and the role of new generation additions, as well as other considerations such as forecasted customer demand, in ensuring the utility meets future capacity and generation needs. This narrative should also explain the influence of utilities' carbon reduction goals on their decisions.
- An explanation of the analysis procedures used by the utility to determine addition and retirement decisions, including the analytical models used, the rationale for selection of those models, and the methods used by the utility to ensure accurate and reliable modeling results;

- A description of the goals and standards used by the utility to set initial parameters for modeling, which may include but should not be limited to its definition of standards for maintaining system reliability, required reserve margins for resource adequacy, and the application of utility carbon reduction goals.
- Specification of the key input assumptions used to model system and market conditions, as well as any alternative assumptions used to conduct sensitivity analysis on the effects of different generation alternatives.
    - This specification shall include a detailed description of how the provider accounts for any existing renewable energy offerings, including but not limited to community solar and renewable energy riders.
- Specific description of all generation scenarios considered in analysis.

Response:

Driving Factors Behind Additions and Retirements

Retirements
At this time, WPPI is not projecting retirement of any of its owned generation. However, during the term of this SEA, WPPI expects to work with the majority owners of its co-owned power plants to evaluate their publically-announced fuel conversion plans. In January 2021, Minnesota Power announced its intention to transform the Boswell Energy Center Unit 4, of which WPPI is a 20% owner, to be coal-free by 2035. In November 2021, WEC Energy Group announced plans to make the Elm Road Generating Station capable of co-firing natural gas with coal, part of its plan to transition away from coal as a fuel source for its generation fleet by 2035.

Additions
Through May 31, 2029, the projected energy space in WPPI's power supply portfolio is quite modest. [redacted]

Analysis Procedures

At its core, WPPI's analysis of generation addition and retirement decisions seeks to determine whether the action (addition or retirement) is likely to decrease WPPI's revenue requirement. Also, in the case of a possible generation addition, WPPI's power supply portfolio must have the appropriate space (baseload, intermediate, or peaking) to accommodate the resource. If the generation addition or retirement decision is projected to decrease WPPI's revenue requirement, then the action is likely to be taken. If the action is not projected to decrease WPPI's revenue requirement, then other considerations may nonetheless result in the action being taken. Those other considerations are the effect of the generation addition or retirement on:

- Maintaining resource adequacy
- Reducing WPPI's greenhouse gas emissions
- The volatility of WPPI's wholesale rates
- Meeting renewable portfolio standards (RPS) requirements
- Resource firmness and dispatchability
- The diversity of WPPI's power supply portfolio

Given WPPI's initial focus on the financial aspects of a generation addition or retirement, the analytical model is a relatively straightforward accounting (in Excel) of the generation's projected costs and revenues. In the case of a generation addition or retirement that (would or currently) meets WPPI's needs, the primary method we use to ensure accurate and reliable modeling results is to consider a range of MISO market energy prices.

Modeling Goals and Standards

As discussed above, in addition to generally aligning generation with load (including required reserve margins), WPPI's modeling of a generation retirement or addition focuses on whether the action is likely to decrease WPPI's revenue requirement. Additionally, the effect of a generation retirement or addition on reducing WPPI's greenhouse gas emissions is an important consideration.

Key Input Assumptions

[redacted]

WPPI resource assumptions include two community solar gardens located in member communities New Richmond and River Falls totaling approximately 500kW, the output of which is sold to WPPI.

Generation Scenarios

Given WPPI's focus on incremental changes to its power supply portfolio (a single generation addition or retirement), "generation scenarios" only come into play to ensure, in the case of an addition, that alternatives based on the other considerations described above are considered and, in the case of a retirement, a more cost-effective or better strategic option appears to exist.